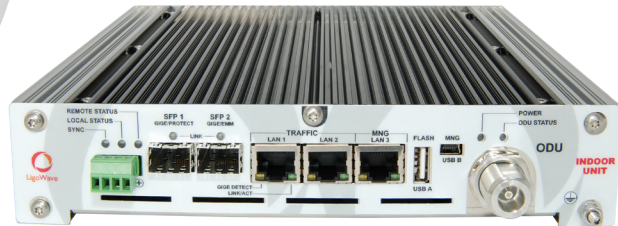


Ligo PTP 620HP

6-38 GHz 730 Mbps Digital Microwave Point-to-Point Device



Product Overview

The LigoPTP 620HP is a split architecture, 6-38 GHz product designed to provide high capacity transmission, flexibility, and convenience for wireless communication networks. The PTP 620HP digital point-to-point radios represent a new microwave radio product line that is designed to address universal applications for both Ethernet and TDM platforms. This advanced technology platform is designed to provide a flexible, cost-effective platform for customers now and into the future.

The PTP 620HP equipment is based upon a common platform to support a wide range of network interfaces and configurations, with capacities up to 32 E1 / T1 (optional - LigoMUX 16) and Gigabit Ethernet Full Duplex capacity up to 365 Mbps (730 Mbps aggregate). The radio family is spectrum and data rate scalable, enabling service providers or organizations to employ appropriate system gain with spectral efficiency and channel availability for optimal network connectivity. The PTP 620HP series digital radios enable network operators (mobile and private), government and access service providers to offer a portfolio of secure and scalable wireless applications for data, video, and voice services.

The PTP 620HP digital radio family is composed of a LigoWave Software Controlled Smart IDU and an Outdoor Unit (ODU). The IDU is designed to be frequency independent, and the ODU is designed to be capacity independent. The PTP 620HP IDU allows selection for multiple capacity options, modulation types, radio frequency channels and transmit output power levels to accommodate and adhere to world-wide regulatory and spectral efficiency requirements.

The PTP 620HP Digital Radio includes integrated Operations, Administration, Maintenance, and Provisioning (OAM&P) functionality and design features enabling simple commissioning when the radio network is initially set up in the field or at the customer's premises.

Key Features

- Wide frequency range support from 6 to 38 GHz
- Flexible channel sizes: from 7 to 56 MHz ETSI, from 10 to 60 MHz ANSI
- Double capacity mode 2+0
- Protection modes: 1+1 Hot Standby, 1+1 Space diversity, 1+1 Frequency diversity
- Modulation types: QPSK, 8PSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM
- Up to 730 Mbps real data throughput (365 Mbps full duplex) in 1+0 configuration
- Up to 1460 Mbps real data throughput (730 Mbps full duplex) in 2+0 configuration
- Low latency, less than 0.5 msec
- Up to 23 - 30 dBm transmit power (frequency dependant)
- Hitless auto-rate support (ACM)
- Automatic transmit power control
- Three copper gigabit Ethernet ports
- SFP extension port
- Pilot system for phase noise improvement
- Short synchronization time up to 50 msec
- External TDM module for 16 E1/T1
- Separated data channels support over microwave link
- VLAN support 802.1q
- Quality of Service 802.1p, IPv4 ToS/DiffServ
- Ethernet traffic limitation support
- SyncEthernet support
- Online Ethernet header compression
- Jumbo frames support up to 10K
- Secure management and monitoring via HTTP, HTTPS, Telnet, SSH, SNMP, Serial
- Built-in useful tools: BER tester, spectrum analyzer, ping, telnet
- No speed-based license fees
- Compact IDU design

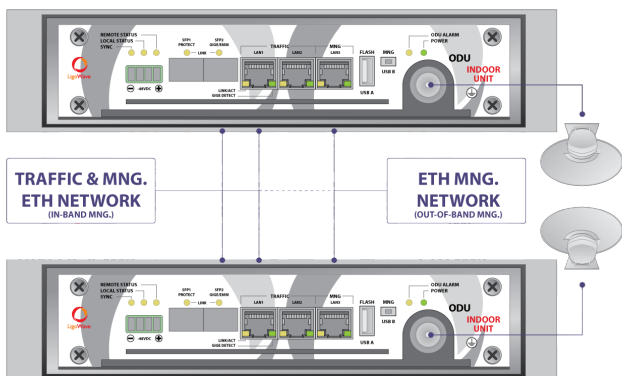
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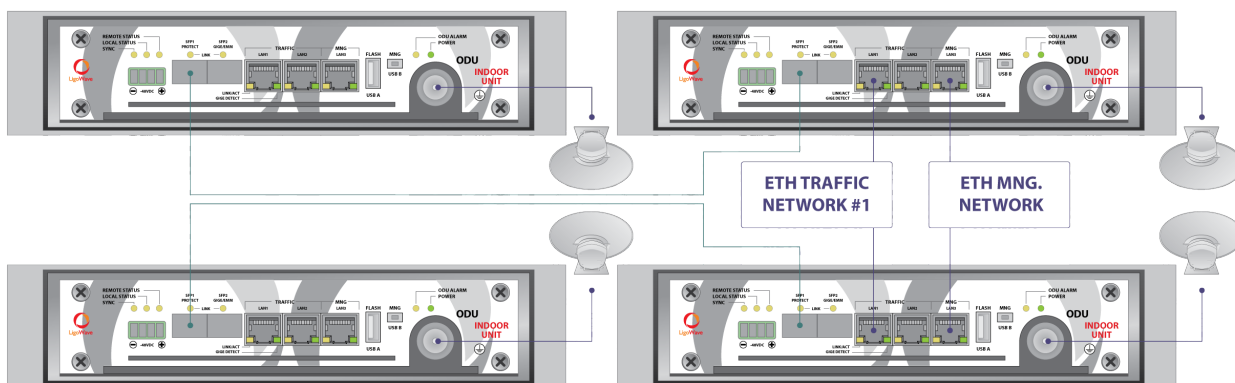
Setup scenarios

With the flexible architecture LigoPTP 620HP supports multiple setup scenarios outlined below.

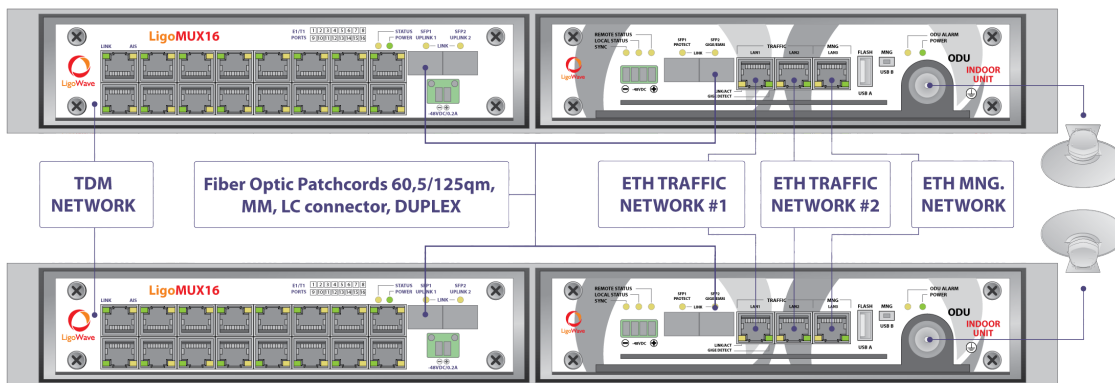


Simple 1+0 configuration for 365 Mbps full duplex (730 Mbps aggregate) capacity.

Double (2+0) scenario for 730 Mbps full duplex (1460 Mbps aggregate) capacity or failover (1+1) scenario with a backup link running at the same time for 365 Mbps full duplex (730 Mbps aggregate) capacity.



Simple (1+0) scenario for 365 Mbps full duplex (730 Mbps aggregate) capacity with 16 E1/T1 interfaces (expandable up to 32 E1/T1 interfaces). LigoMUX 16 is required for this setup. External LigoMUX multiplexer can be used in a 1+0, 1+1 and 2+0 scenario. To find more information about LigoMUX 16 please visit our website <http://www.ligowave.com>.



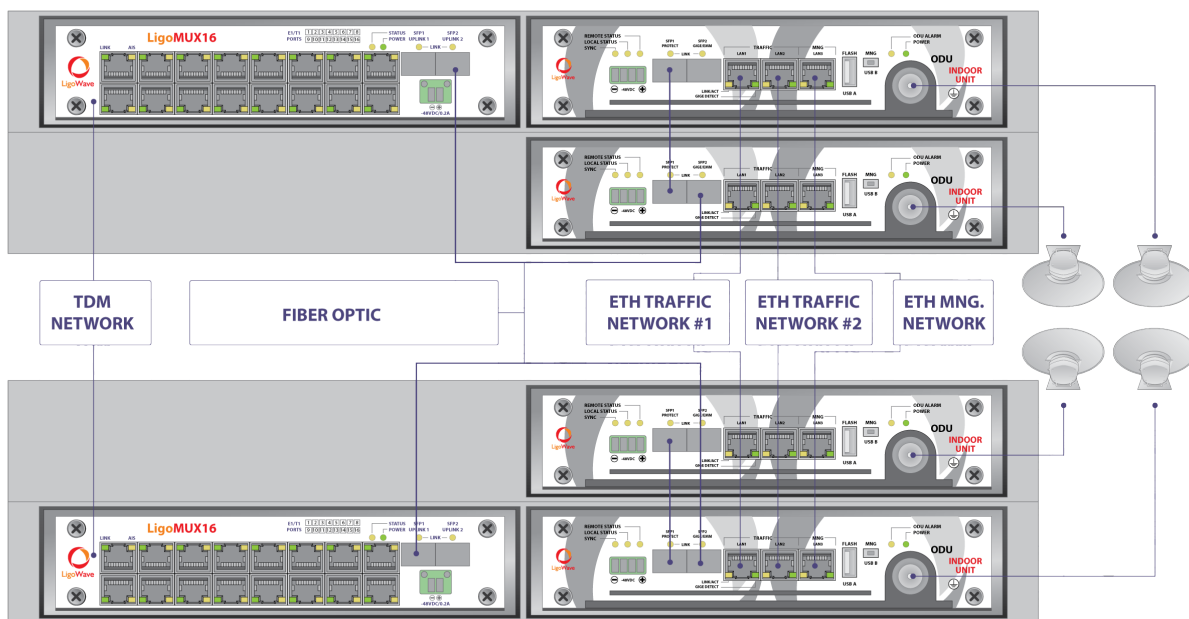
Ligo PTP 620HP

6-38 GHz 730 Mbps Digital Microwave Point-to-Point Device

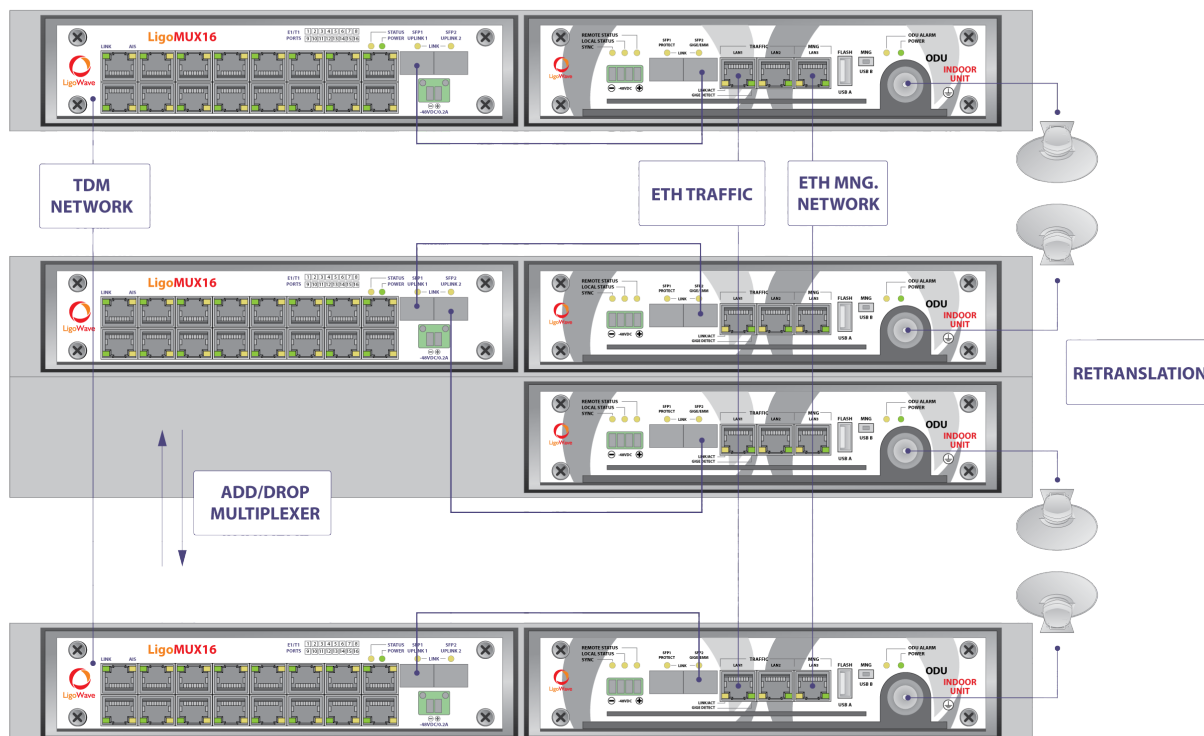


Setup scenarios

Double (2+0) scenario for 730 Mbps full duplex (1460 Mbps aggregate) capacity or failover (1+1) scenario with a backup link running at the same time for 365 Mbps full duplex (730 Mbps aggregate) capacity with 16 E1/T1 interfaces running concurrently (expandable up to 32 E1/T1 interfaces). LigoMUX 16 is required for this setup. External LigoMUX multiplexer can be used in a 1+0, 1+1 and 2+0 scenario. To find more information about LigoMUX 16 please visit our website <http://www.ligowave.com>.



Simple (1+0) scenario for 365 Mbps full duplex (730 Mbps aggregate) capacity with data retranslation over a second link. LigoMUX 16 is required for this setup. External LigoMUX multiplexer can be used in a 1+0, 1+1 and 2+0 scenario. To find more information about LigoMUX 16 please visit our website <http://www.ligowave.com>.



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Specifications

Frequency band (GHz)	6U/L	7	8	10	11	13	15	
Frequency range (GHz)	5.925-7.110	7.125-7.725	7.9-8.5	10.15-10.65	10.7-11.7	12.75-13.25	14.4-15.4	
T/R Spacing (MHz)	160	150	119	91	490	225	315	
	170	154	126	350	500	266	322	
	252.04	160	208		530		420	
	300	161	266				475	
	340	168	311.32				490	
	350	196					640	
		245					644	
							728	
Channel bandwidth (MHz)	7, 14, 27.5, 28, 40, 56 (ETSI/CEPT); 10, 20, 25, 30, 40, 50, 60 (ANSI/FCC)							
Modulation	QPSK, 8PSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM							
Full Duplex / Aggregate Capacity (Mbps)	1+0: 365 / 730 2+0: 730 / 1460							
Frequency stability (ppm)	+/- 5							
Max Power (dBm), Adjustable	QPSK	30	30	30	26.5	28	26	26
	8PSK	29	29	29	24	26	25	25
	16/32QAM	28	28	28	22.5	25	24	24
	64/128QAM	25	25	25	20.5	22	20	20
	256QAM	23	23	23	18.5	20	18	18
Receive Sensitivity (dBm), BER 10-6 @ 56MHz Channel	QPSK							-86
	8PSK							-80
	16QAM							-79
	32QAM							-75
	64QAM							-72
	128QAM							-69
Receive Sensitivity (dBm), BER 10-6 @ 40MHz Channel	256QAM							-66
	QPSK							-87
	8PSK							-82
	16QAM							-80
	32QAM							-77
	64QAM							-75
Receive Sensitivity (dBm), BER 10-6 @ 28MHz Channel	128QAM							-71
	256QAM							-68
	QPSK							-88
	8PSK							-84
	16QAM							-82
	32QAM							-79
Receive Sensitivity (dBm), BER 10-6 @ 14MHz Channel	64QAM							-76
	128QAM							-73
	256QAM							-70
	QPSK							-92
	8PSK							-87
	16QAM							-85
32QAM							-82	
64QAM							-79	
128QAM							-76	
256QAM							-73	

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Specifications

Frequency band (GHz)	18	23	26	28	32	38	
Frequency range (GHz)	17.7-19.7	21.2-23.6	24.2-26.5	27.5-29.5	31.8-33.4	38.6-40.0	
T/R Spacing (MHz)	1008	1008	800	450	812	700	
	1010	1200	1008	1008		1260	
	1560	1232					
Max Power (dBm), Adjustable	QPSK	25.5	25	25	25	23	23
	8PSK	24	24	24	23.5	22	22
	16/32QAM	23	23	22	22	21	20
	64/128QAM	19	19	19	19	18	17
	256QAM	17	17	17	17	16	15
IDU Interfaces							
IF (ODU)	N type, TX 350 MHz, RX 140 MHz						
Ethernet data	3x LAN 10/100/1000 BaseT (RJ45); 2x SFP gigabit extension						
IP management	Inband or out of band via LAN3; alternate via USB						
TDM	16x E1/T1 via external module LigoMUX 16						
Operating modes							
1+0	Regular single link						
1+1	Protection using two links: Host Standby, Space diversity, Frequency diversity						
2+0	Double capacity using two links						
Network features							
VLAN	802.1q						
QoS	802.1p, ToS/DiffServ						
Traffic limitation	Supported						
Max frame size (bytes)	10 k						
MAC table (#)	8 k						
Latency (ms)	0.5						
Environmental							
Operating temperature range (°C)	IDU: from -5 to +50 ODU: from -35 to +55						
Mechanical data							
Dimensions W x H x D (in)	IDU: 8.3 x 1.7 x 9.8 ODU: 10.9 x 9.4 x 3.6						
Weight (lbs)	IDU: 4.4 ODU: 9.5						
Powering							
Input voltage (VDC)	from -20 to -60						
Power consumption (W)	IDU: 18 ODU: 35						
Management features							
Management and monitoring	Web GUI, Telnet/SSH CLI, SNMP traps						
Regulatory							
ETSI / FCC	Compliant						
Standards							
Operation	ETSI EN 300 019, Part 1-3, Class 3.2						
Storage	ETSI EN 300 019, Part 1-1, Class 1.2						
Transportation	ETSI EN 300 019, Part 1-2, Class 2.3						
Power	EN 300 132-2						
Radio frequency	EN 302 217-2-2						
EMC	EN 301 489-1, EN 301 489-3						
Safety	IEC/EN 60950-1						

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